



## King's Research Portal

DOI:

[10.1016/j.neuroscience.2018.05.044](https://doi.org/10.1016/j.neuroscience.2018.05.044)

*Document Version*

Peer reviewed version

[Link to publication record in King's Research Portal](#)

*Citation for published version (APA):*

Radua, J. (2018). Frontal cortical thickness, marriage and life satisfaction. *Neuroscience*.  
<https://doi.org/10.1016/j.neuroscience.2018.05.044>

### **Citing this paper**

Please note that where the full-text provided on King's Research Portal is the Author Accepted Manuscript or Post-Print version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version for pagination, volume/issue, and date of publication details. And where the final published version is provided on the Research Portal, if citing you are again advised to check the publisher's website for any subsequent corrections.

### **General rights**

Copyright and moral rights for the publications made accessible in the Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the Research Portal

### **Take down policy**

If you believe that this document breaches copyright please contact [librarypure@kcl.ac.uk](mailto:librarypure@kcl.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.

# Accepted Manuscript

Commentary

Frontal cortical thickness, marriage and life satisfaction

Joaquim Radua

PII: S0306-4522(18)30394-4

DOI: <https://doi.org/10.1016/j.neuroscience.2018.05.044>

Reference: NSC 18481

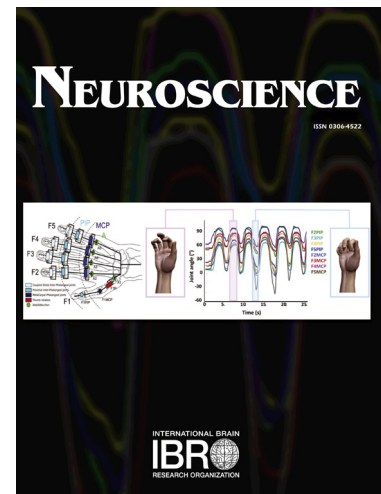
To appear in: *Neuroscience*

Received Date: 25 May 2018

Accepted Date: 29 May 2018

Please cite this article as: J. Radua, Frontal cortical thickness, marriage and life satisfaction, *Neuroscience* (2018), doi: <https://doi.org/10.1016/j.neuroscience.2018.05.044>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



## Frontal cortical thickness, marriage and life satisfaction

Joaquim Radua<sup>1-4</sup>

<sup>1</sup> FIDMAG Germanes Hospitalàries, Sant Boi de Llobregat, Barcelona, Spain

<sup>2</sup> Mental Health Research Networking Center (CIBERSAM), Madrid, Spain

<sup>3</sup> Centre for Psychiatric Research and Education, Department of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden

<sup>4</sup> Department of Psychosis Studies, Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, UK

### Correspondence to:

Joaquim Radua

King's College London, Institute of Psychiatry, Psychology and Neuroscience

PO 69, Division of Psychosis Studies

16 De Crespigny Park, London, SE5 8AF

Telephone: 02078480363 - FAX: 02078480379

Email: [quimradua@gmail.com](mailto:quimradua@gmail.com)

## TEXT

Subjective well-being may be understood as what we colloquially call “happiness”, and in addition to being of obvious interest per se, it is associated to beneficial outcomes such as lower mortality (Martin-Maria et al., 2017) or higher work productivity (Oswald et al., 2015). Meta-analyses have shown that it is strongly correlated with personality (especially with low neuroticism and, to a lower extent, with high extraversion) (Steel et al., 2008), but life conditions and events also play a role.

An important number of studies have investigated the neural substrates of emotional processing (Radua et al., 2014), as well as the brain abnormalities in disorders with decreased positive affect or increased negative affect (e.g., depression and anxiety) (Wise et al., 2016; Pico-Perez et al., 2017), adding some indirect knowledge about the neural mechanisms of subjective well-being. However, the latter also includes a cognitive component, namely feeling satisfied with one’s life (Diener 2000), which have been less investigated.

In this issue of Neuroscience, Zhu *et al.* use a large sample (n=1031) to investigate whether regional cortical thickness may correlate with life satisfaction, and whether relationship status (e.g., being married) may modulate this correlation. The reason to investigate this potential modulation is that married individuals feel more satisfied, whereas individuals who date infrequently feel less (Dush and Amato, 2005).

They find a very interesting interaction between gray matter and relationship status. Specifically, they observe a negative correlation between the thickness of superior and middle frontal gyri and life satisfaction. In plain words, individuals with a thin frontal cortex felt more satisfied with life, whilst individuals with a thick frontal cortex felt less.

However, this correlation is not apparent in individuals who were married or in a cohabiting relationship. They felt satisfied with life independently of the thickness of their frontal cortex (see Figure).

Finally, Zhu *et al.* find that while the modulation is still statistically significant when controlling for the effects of social support, it is not when perceived stress is included in the equation. These results might point to that the modulation could be related to the effects of marriage/cohabitation on reducing perceived stress.

In my opinion, further studies will help us better understand these interesting findings. The correlation between gray matter and life satisfaction in non-married non-cohabiting individuals could be due, for example, to the presence of different subgroups (divorced, people who date others but do not live together, etcetera), because some of these subgroups could have both increased frontal gray matter and lower life satisfaction. And we could even hypothesize that this increased gray matter and lower life satisfaction could be due to an increased prevalence of individuals scoring high in neuroticism in these subgroups.

**ACKNOWLEDGEMENTS**

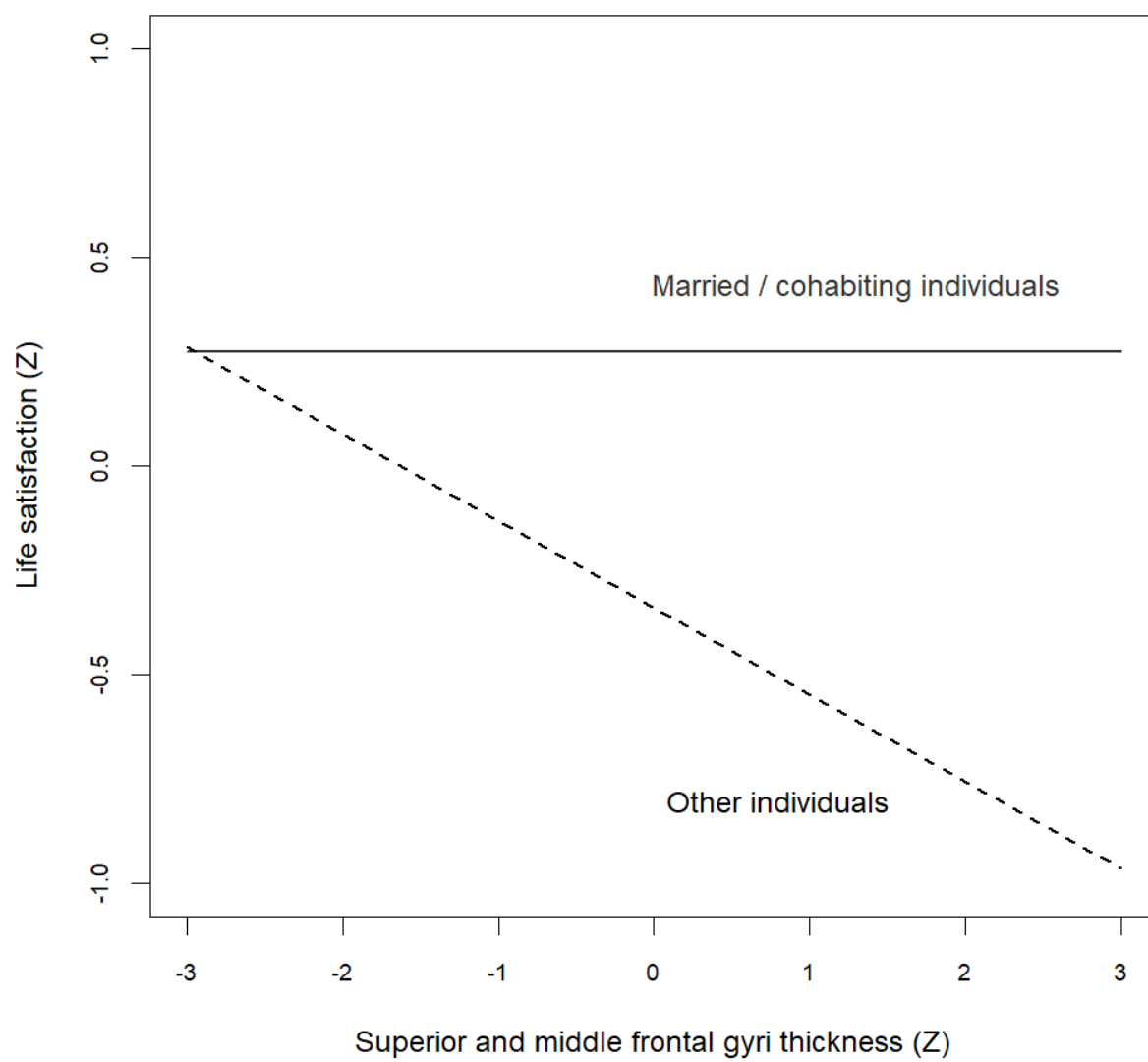
This work was supported by Miguel Servet Research Contract MS14/00041 and Research Project PI14/00292 from the Plan Nacional de I+D+i 2013–2016, the Instituto de Salud Carlos III-Subdirección General de Evaluación y Fomento de la Investigación and the European Regional Development Fund (FEDER). The funders had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

**REFERENCES**

- Diener E (2000) Subjective well-being. The science of happiness and a proposal for a national index. *Am Psychol* 55:34-43.
- Dush CMK, Amato PR (2005) Consequences of relationship status and quality for subjective well-being. *J Soc Pers Relatsh* 22:607-627.
- Martin-Maria N, Miret M, Caballero FF, Rico-Urbe LA, Steptoe A, Chatterji S, Ayuso-Mateos JL (2017) The impact of subjective well-being on mortality: A meta-analysis of longitudinal studies in the general population. *Psychosom Med* 79:565-575.
- Oswald AJ, Proto E, Sgroi D (2015) Happiness and Productivity. *J Labor Econ* 33:789-822.
- Pico-Perez M, Radua J, Steward T, Menchon JM, Soriano-Mas C (2017) Emotion regulation in mood and anxiety disorders: A meta-analysis of fMRI cognitive reappraisal studies. *Prog Neuropsychopharmacol Biol Psychiatry* 79:96-104.
- Radua J, Sarro S, Vigo T, Alonso-Lana S, Bonnin CM, Ortiz-Gil J, Canales-Rodriguez EJ, Maristany T, Vieta E, McKenna PJ, Salvador R, Pomarol-Clotet E (2014) Common and specific brain responses to scenic emotional stimuli. *Brain Struct Funct* 219:1463-1472.
- Steel P, Schmidt J, Shultz J (2008) Refining the relationship between personality and subjective well-being. *Psychol Bull* 134:138-161.
- Wise T, Radua J, Nortje G, Cleare AJ, Young AH, Arnone D (2016) Voxel-Based Meta-Analytical Evidence of Structural Disconnectivity in Major Depression and Bipolar Disorder. *Biol Psychiatry* 79:293-302.

**FIGURE LEGEND**

Figure 1. Relationship between frontal cortical thickness and life satisfaction in married / cohabiting individuals and in other individuals.





**HIGHLIGHTS**

- Zhu *et al.* investigate the neural substrates of life satisfaction
- Individuals with a thick frontal cortex felt less satisfied.
- This lower life satisfaction is not observed in married individuals.